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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/445,892	04/24/2000	SHIGETOSHI SEGAWA	MAT-7855US	1490

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LAWRENCE E ASHERY  
RATNER & PRESTIA  
ONE WESTLAKES BERWYN SUITE 301  
PO BOX 980  
VALLEY FORGE, PA 19482-0980

EXAMINER

MAYES, MELVIN C

ART UNIT PAPER NUMBER

1734

DATE MAILED: 02/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/445,892

Applicant(s)

SEGAWA ET AL.

Examiner

Melvin Curtis Mayes

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-11 and 14-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-11 and 14-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

(1)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(2)

Claims 1, 3, 7, 9 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0 535 711 in view of JP 6-125171 and Dudding for the reasons as set forth in the previous Office Action.

EP 0 535 711 discloses a method of making a multilayered ceramic substrate comprising: forming green sheets of low-temperature firing substrate material; laminating green sheets; laminating, on both sides of the laminate, green sheets of inorganic material such as alumina which is not sintered at the sintering temperature of the green sheets; sintering the laminate; and removing the unsintered alumina inorganic material layers by a conventional method such as sand blast (pg. 4, lines 30-57). EP '711 does not disclose removing the unsintered inorganic material layers by spraying (blasting) alumina powder, water and compressed air.

JP 6-125171 teaches that sand blasting is the method of grinding the face of a ceramic substrate by spraying particles such as alumina on the substrate (computer translation, pg. 2, paragraph [0016]).

Dudding teaches that dry abrasive blasting techniques such as sand blasting have the disadvantage of producing a wide dispersion of the debris from the surface and of the dust formed by the abrasive particles after impact on the surface while blasting surfaces with high

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pressure water or air jets requires apparatus capable of generating pressures of some thousands of pounds per square inch. Dudding teaches that the conventional dry blasting technique can be modified to avoid the disadvantage of dispersion and also to improve the efficiency of that technique in the amount of abrasive that needs to be utilized by providing an apparatus in which damping liquid (water) is entrained in a compressed air stream employed to carry the abrasive so as to distribute the water in the compressed air stream, whereby dust and debris arising from the blasting of the surface is substantially localized (col. 1, lines 6-37, col. 2, line 8).

It would have been obvious to one of ordinary skill in the art to have modified the method of EP '711 for making a multilayered ceramic substrate by removing the unsintered inorganic material by blasting with a combination of alumina particles, water and compressed air instead of dry sand blasting, as taught by Dudding to avoid the disadvantage of dispersion of debris and dust produced when dry sand blasting and to improve the efficiency in the amount of abrasive that needs to be utilized. The use of water and compressed air with the alumina particles would have been obvious to one of ordinary skill in the art as taught by Dudding to carry the abrasive and to distribute the water in the compressed air stream, whereby dust and debris arising from the blasting of the surface is substantially localized. Providing alumina as the abrasive with the water and compressed air for the blasting would have been obvious to one of ordinary skill in the art because EP '711 discloses sand blasting and JP '171 teaches that sand blasting involves spraying particles such as alumina. By using alumina to blast unsintered alumina inorganic material, the ceramic for blasting is the same ceramic as that of the unsinterable green sheets, as claimed.

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## (3)

Claims 4, 5, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 1 and 9 above, and further in view of Kim et al. for the reasons as set forth in the previous Office Action.

Kim et al. teach that alumina can be grit blasted using alumina as the abrasive and at a pressure of 50 psi ( $3.5 \text{ kg/cm}^2$ ). Kim et al. further teach using fine grit of for example 12 to 20 microns in diameter (col. 4, lines 15-45, col. 6, lines 5-10).

Blasting the unsintered alumina using the compressed air at an air pressure in the range of 3 to  $5.5 \text{ kg/cm}^2$ , as claimed in Claims 4 and 10, would have been obvious to one of ordinary skill in the art, as Kim et al. teach that alumina can be grit blasted with alumina at a pressure of 50 psi ( $3.5 \text{ kg/cm}^2$ ). The particular pressure used for blasting would have been obvious to one of ordinary skill in the art to achieve complete removal of the unsintered alumina from the ceramic substrate and could have been arrived at without undue experimentation.

Providing the alumina for dry blasting of a mean particle size of less than 10 microns, as claimed in Claims 5 and 11, would have been obvious to one of ordinary skill in the art as Kim et al. teach that finer grit of the order of 12 to 20 microns can be used for grit blasting.

## (4)

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claim 1 above, and further in view of Yam et al. for the reasons as set forth in the previous Office Action.

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Yam et al. teach that the abrasive media such as glass beads, alumina or sand can be collected and reused for additional blast cleaning (col. 1, lines 23-34, col. 4, lines 1-4, col. 5, lines 20-22).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by collecting the alumina after blasting, as taught by Yam et al. for reuse of the abrasive media for additional blast cleaning.

### *Response to Arguments*

(5)

Applicant's arguments filed December 2, 2002 have been fully considered but they are not persuasive.

Applicant argues that the combination of references does not produce the claimed invention because EP '711 teaches removal of unsintered material by sandblast or water jetting, JP '171 teaches removal of the remaining particles, not the entire sheet, by a dry process and not by a mixture of particles and water and Dudding does not disclose anything about the removal of unsintered sheets or suggest using wet blasting. Applicant argues that motivation to combine the references has not been shown. Applicant argues that JP '171 teaches away from removing the entire sheet by blasting, argues that the pressure parameters of Kim are for a dry process, not a wet process, and argues that Yam teaches away from the invention by suggesting the use of a water soluble abrasive.

(6)

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In the applied rejection, EP '711 discloses using sandblast or water jetting to remove unsintered alumina material (shrinkage suppression sheet) after sintering. As set forth by JP '171, sandblasting as known in the art involves spraying particles such as alumina. JP '171 is pertinent because of this general teaching of what is considered "sandblasting" in the art, not the particular methodology used in JP '171 for removing unsintered sheets. It is EP '711 that discloses removing the unsintered alumina shrinkage suppression sheet by sand blasting.

Applicant claims spraying ceramic powder and water together with compressed air. This is basically a combination of sandblasting (spraying alumina particles, which requires compressed air) and water jetting, two methods which are disclosed by EP '711. While EP '711 does not disclose using sand blasting and water jetting together to remove the unsintered alumina sheet, the use of abrasive particles, water and compressed air is clearly suggested by Dudding. Dudding teaches that the conventional dry blasting technique can be modified to avoid the disadvantage of dispersion and also to improve the efficiency of that technique in the amount of abrasive that needs to be utilized by providing damping liquid (water) entrained in a compressed air stream employed to carry the abrasive so as to distribute the water in the compressed air stream, whereby dust and debris arising from the blasting of the surface is substantially localized. Dudding clearly provides motivation for using water in combination with sand blasting, the

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motivation being to avoid the disadvantage of dispersion of debris and dust produced when dry sand blasting and to improve the efficiency in the amount of abrasive that needs to be utilized. Even though Dudding does not discuss these advantages expressly with respect to removing unsintered sheet, the motivation for using water with compressed air to carry an abrasive when blasting a surface is pertinent to the method of EP '711, the motivations being to improve efficiency and to minimize dispersion of dust and debris.

Kim et al. is pertinent to the pressure and particle size of alumina used for blasting alumina, and is thus pertinent to using alumina to remove unsintered alumina in the method of EP '711. The pertinent teaching of Yam et al. is that abrasive media such as glass beads, alumina or sand can be collected and reused for additional blast cleaning. While Yam suggests using a water soluble abrasive blast media to reduce cleanup costs, this does not teach away from using a water insoluble abrasive media if it is desired to collect and reuse the media for additional blast cleaning. Collecting and reuse of abrasive media has cost benefits over using a water soluble abrasive media, the benefit being that the abrasive media can be reused for future abrasive cleaning. Any cost benefit of using a soluble abrasive does not negate the suggestion to collect and reuse abrasive when the abrasive is not soluble, such as alumina used to remove unsintered alumina in the method of the references as combined.



*Conclusion*

(7)

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

(8)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 703-308-1977. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

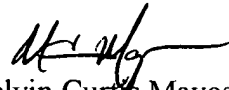
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 703-308-3853. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

  
Melvin Curtis Mayes  
Primary Examiner  
Art Unit 1734

MCM  
February 2, 2003